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INDEX OF VOLUME XXII (1950)

Names of plants are spelled as given in the author's copy. The JOURNAL has made every attempt to assure accuracy of all names used, but does not guarantee them to be so. Items in CAPITAL LETTERS indicate the title of a feature article. Page numbers in bold type (12) indicate an illustration of the item named. Casual references are not indexed. Major references are either in capital letters or have bold face figure references. Names of books are quoted.

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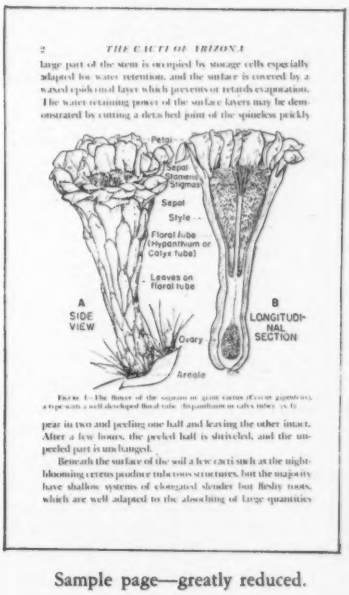
New Edition of "Arizona Cacti"

By Lyman Benson. Published for the University of Arizona by the University of New Mexico Press, Albuquerque, New Mexico.

In this second edition of this semipopular manual for the identification of the native cacti growing in Arizona, the author, Professor of Botany at Pomona College, has made a number of revisions of classifications and nomenclature together with numerous refinements and additional data upon the characteristics and distribution of species and varieties. As in the first edition, technical terms are reduced to a minimum, but the arrangement is formal; keys are provided for the scientific or popular name of any cactus, and each plant is described in considerable detail. Most of the species are illustrated either by photographs, five of which are in full color, or by line drawings, or both, and distributional maps are provided for sixty of the most important plants. A wealth of information and a handsome book for the specialist and general reader.

The above summary is most inadequate to express the value of this book. Besides being invaluable for the student of Arizona cacti, it is a textbook in understandable English that introduces the reader to the study of cacti. At first glance the plant names *"Cereus" Greggii* and *"Cereus" Thurberi,* etc., were a shock to those of us who have become accustomed to the use of *Peniocereus Greggii* and *Lemaireocereus Thurberi* for the last twenty-five years, however the open-mindedness of the author's discussion leads one to believe that we may soon have a complete revision of the classification of cacti. The following quotations from Dr. Benson's book show the straight-forward reasoning:

"Variations in the naming of genera and of species occur in different books. For example, Britton and Rose in their four-volume work on the cactus family (*The Cactaceae* 1-4: 1919-23) adopted five different generic names for the five Arizona species of *Cereus,* as follows: *Carnegiea, Peniocereus, Wilcoxia, Lophocereus,* and *Lemaireocereus.* This does not represent an error or necessarily a mistake in judgment but instead a difference of opinion. Some botanists believe that it is more advantageous to include a narrow range of forms in a genus or species; others believe it is more practical to include a broader group of variants. Each individual attempts to classify the plants of various families in a uniform manner, and there is no 'right' or 'wrong' system. The goal of the conservative and the liberal alike is a consistent method of classification of the plant kingdom. The choice must be based, therefore, upon (A) conformity to prevailing practice through the world as a whole for naming the entire plant kingdom, as far as this can be determined, and (B) practical consideration. . . . To bring classification of the rest of the plant kingdom into a system comparable to that current in many books on the Cactaceae would require at least one million changes of plant names, and probably this is a marked understatement."


2 THE CACTI OF ARIZONA

large part of the stem is occupied by storage cells especially adapted for water retention, and the surface is covered by a waxed epidermal layer which prevents or retards evaporation. The water retaining power of the surface layers may be demonstrated by cutting a detached joint of the spineless prickly

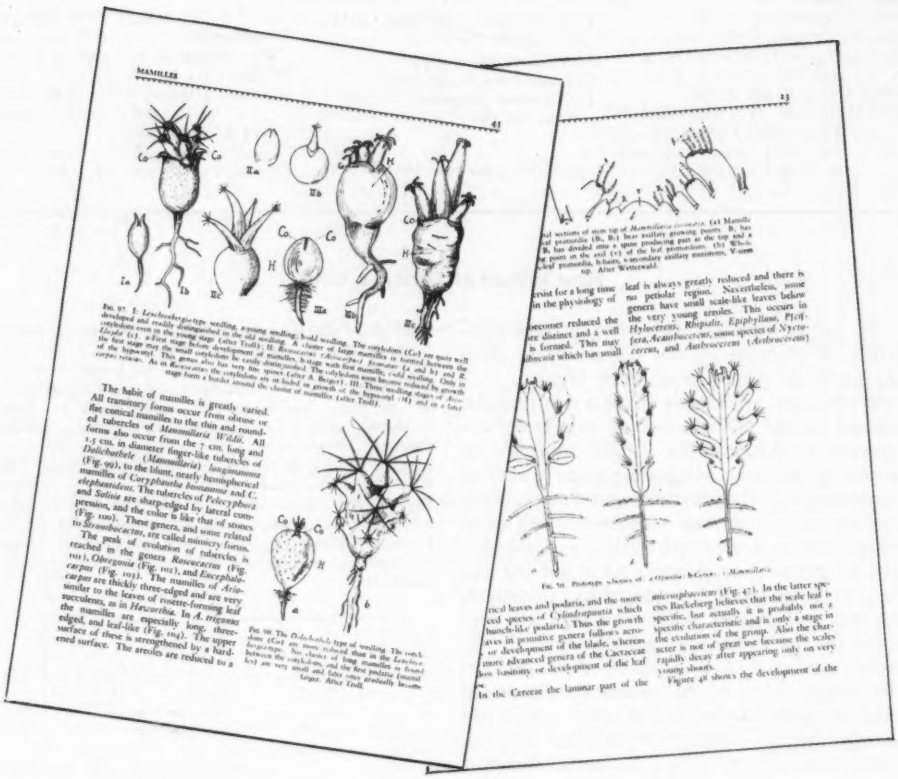
FIGURE 1.—The flower of the saguaro or giant cactus (*Cereus giganteus*), a type with a well-developed floral tube. (Equanimum in calyx tube) (x ½)

pear in two and peeling one half and leaving the other intact. After a few hours, the peeled half is shriveled, and the unpeeled part is unchanged.

Beneath the surface of the soil a few cacti such as the night-blooming cereus produce tuberous structures, but the majority have shallow systems of elongated slender but fleshy roots, which are well adapted to the absorbing of large quantities

Sample page—greatly reduced.

The twenty-nine full pages of excellent photographs, the color plates, distribution maps, illustrated keys, and the many fine drawings added to the scholarly treatment of the first-hand information makes this 183 page book a *must* for anyone interested in cacti. Price $4 postpaid; plus sales tax in California. Order from Abbey Garden Press, 132 W. Union Street, Pasadena 1, Calif.



"The Morphology of Cacti"

It has been stated that morphology is the key to phylogeny. For this to be true, morphology must encompass more than exact descriptions of plants; morphology must also show the development of shape of each plant organ. Any feature of a plant has not arisen suddenly, but is the product of a long evolutionary transformation, both anatomical and physiological. Unfortunately, many of the intergrading evolutionary forms have been lost, and the result is numerous missing links in the phylogenetic chain. However, by a comprehensive study and comparison of all organs of plants that have survived to the present time, the missing links may be partially filled, the path of the evolutionary changes may now be followed, and the true relationships of genera and species found. Thus morphology is the key to phylogeny.

Morphology is also the key to an understanding of the plant itself, that is, its life, beauty, and habit. Only from a knowledge of the primary habit of the plant can the plant's vital power and its struggle for existence be understood.

It is the hope of the author that this monograph will fulfill the purpose of a morphological study, and that it will provide all students of the Cactaceae with a guide and incentive to further exploration of the evolution of cacti.

This section on roots and stems is the first of three treating with the morphology of the Cactaceae. The following two sections on flowers, fruits, and seeds, will appear shortly.

By Dr. Franz Buxbaum and edited by E. B. Kurtz, Jr. Published by Abbey Garden Press, 132 W. Union Street, Pasadena, Calif., October, 1950. 100 pages 7x10 in., 180 photos and drawings. Price $2.75 postpaid.